



WHITE PAPER

Quality in Online Project Based Learning

An analysis of engagement, satisfaction and outcomes at scale

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Abstract

To equip students with the skills and capabilities they need to succeed in the future of work, educators seek to deliver a range of experiential learning programs around the theoretical curriculum.

However, experiential learning with high proportions of in person engagement can be complex and costly for education program managers to deliver at scale.

Team projects where students apply their knowledge to address real problems posed by employers are a significant and fast growing part of the equation.

Online team projects potentially offer educators substantial benefits including lower cost, broader geographic reach and enhanced scalability, but only if quality can be maintained. Covid-19 social distancing and travel requirements have substantially increased the need for high quality online experiential learning.

The Practera experiential learning platform supports online, blended and in-person team projects models with students from a wide range of universities. Practera is designed to engage, support and quality assure students, educators and industry mentors in experiential learning workflows.

This analysis set out to test the nature and degree of quality variation in team based projects with higher proportions of online engagement, as measured against a control program with similar characteristics.

This study analyses a sample of **7909 participants from 22 universities**, across 124 cohorts and 4 types of programs supported by the Practera platform. The programs exhibit similar instructional design, but different levels of duration and online intensity. 6 hypotheses were tested using a range of input, satisfaction and outcomes measures. This analysis built upon and substantially confirms the results of an September 2020 study across 74 cohorts and 5394 participants.

Summary Findings

- 1 Higher levels of online engagement produced equivalent or better output quality to mostly offline or 50/50 blended models
- 2 Participant (student or industry mentor) satisfaction was similar with higher online engagement
- 3 Under appropriate conditions and with appropriate learning design, online project learning models can deliver comparable quality outcomes to mostly offline models at up to 90% lower costs



Background

To equip students with the skills and capabilities they need to succeed in the future of work, educators seek to deliver a range of experiential learning programs around the theoretical curriculum.


Team projects where students apply their knowledge to address real problems posed by employers are a significant and fast growing part of the equation.


These are programs designed to engage students in a structured way with real world activities and challenges - programs such as:


- ✓ Networking
- ✓ Accelerators
- ✓ Industry projects
- ✓ Internships
- ✓ Volunteering
- ✓ Mentoring
- ✓ Placements
- ✓ Study abroad


These programs might be formally embedded in the educational curriculum, be available around the curriculum, or be created by students through extracurricular activity and recognised by the institution.

Experiential learning is critical for students to develop globally valuable employability skills like: [service orientation, teamwork, collaboration and creativity.](#)

 Employer groups like the World Economic ¹ Forum cite these skills as increasingly important and critical to the future of work.

 The American Association of Colleges and Universities recommends that integrative and adaptive learning should form approximately 1/4 of the average college educational experience.

 A recent Northeastern University² survey found that employers' top priority recommendation for colleges and universities was to "include real-world projects and engagements with employers and the world of work" in their programmes.

 Many Australian education providers have embraced strategic commitments to deliver this kind of education to every student. For more than 5 million international students employability and career relevant work opportunities rank highly as a key driver of student destination choice and experience satisfaction³.



However, high quality experiential learning can be **complex** and **costly** for **education program managers** to deliver at scale. Challenges include designing effective & efficient programs, engaging students, mentors and educators in complex workflows, and monitoring and quality assurance.

'Quality' experiential learning is often conflated with face to face physical interaction, like the 12 week 9-5 internship with in-person mentoring and de-brief sessions with educators. Online and blended experiential learning models tend to be less prevalent in experiential learning than general education.

In 2020, the impact of social distancing and travel restrictions on face to face models of experiential learning has been profound – one study showed that 49% of US internships were cancelled, on hold or reduced. A further 30% went online. **16% were unaffected**⁴

If quality can be maintained, increased penetration of online & blended experiential learning potentially offers substantial benefits, including;

- 1 Maintaining reach and access for students unable to participate in face to face experiential learning
- 2 Help overcome barriers to employer participation
- 3 Enable transnational experiential learning for students unable to travel
- 4 Reduced costs and increased scalability
- 5 Improve consistency, quality assurance and research insights through data
- 6 Enable skills micro-credentialing to add value to the degree

¹ World Economic Forum, New Vision for Education Project 2016

² Gallagher, Sean et al, Northeastern University's Center for the Future of Higher Education and Talent Strategy, 2018

³ Deloitte Access Economics, The value of international education to Australia 2016

⁴ Cartus, https://www.cartus.com/files/4315/9172/6562/Cartus-Internship_Pulse-Survey-0520.pdf



Practera Platform

Practera is a platform designed to support educators delivering experiential learning programs.

The system aims to overcome some of the specific challenges inherent in experiential learning through three key mechanisms;



Best practice design templates for a wide range of experiential learning programs



Systematic workflow, engagement and collaboration support for students & mentors through gamified app

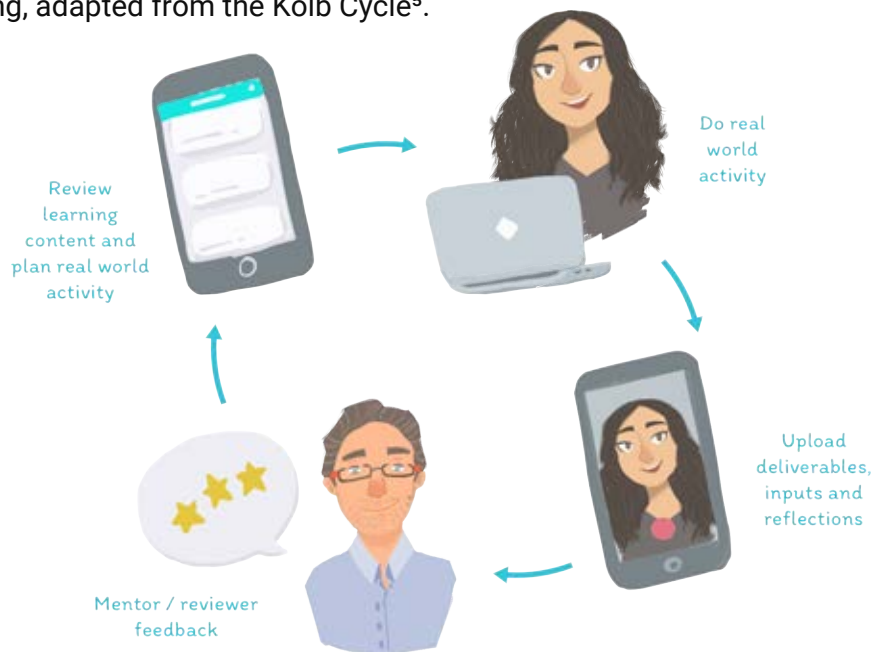


Quality assurance with analytics & AI intervention tools

Practera supports a wide range of experiential learning programs with different degrees of 'online' vs 'offline' activity.

These can range from simple use of fast feedback tools to capture data about real world experiences, up to entirely online collaborative programs between learners and mentors in different countries.

Practera essentially systematises and captures data from the repeatable learning at the core of experiential learning, adapted from the Kolb Cycle⁵.



⁵ Kolb, D. (1984). Experiential Learning: experience as the source of learning and development.



The research

One of the key questions we are asked by our University and Government customers is whether online experiential learning can be as high quality as a mostly in person experience, and this was the question we set out to test in this research.

Six hypotheses for the research were developed

- Higher % online would strongly correlate with a lower completion rate
- Higher % online would strongly correlate with a higher team dissonance
- Higher team dissonance would strongly correlate with lower output quality
- Higher % online would moderately correlate with lower student satisfaction
- Higher % online would moderately correlate with lower output quality
- Higher program cost to deliver would moderately correlate with lower output quality

Sample & metrics

Practera selected four types of team based project programs for this research. These programs were selected as they have similar characteristics yet markedly different levels of online vs 'face to face' learning & activity in the delivery model. Cohorts from these programs were further selected to maximise shared characteristics outside of the % of online activity;

- All programs embed authentic, personalised industry feedback & mentoring
- Completing programs in last 18 months – same generation of content, design and Practera platform
- Multi-national teams incorporating diverse cultural groups including an average >50% international students
- >80% of the cohorts were extra-curricular in nature (not for credit)
- Australian Universities



Program Summary

- 1 The Nano Projects Program (Nano) is a 100% online project program which connects teams of students with exporters to undertake 2 week research projects
- 2 The Micro Projects Program (Micro) connects teams of students with government, business and community organizations to work on a real world 3 week team based project. Students work online and in person, meeting their clients & mentors a total of 7 times
- 3 The Micro Projects Program (Micro Online Covid) model was taken entirely online due to Covid-19 requirements. Teams and client / mentor meetings were conducted using videoconferencing integrated to the Practera platform
- 4 Control Program; is a 12 week project program where students work in co-located teams, have class time together supported by an academic, and work with mentors and facilitators in 5 half day workshops

	CONTROL PROGRAM	MICRO	MICRO ONLINE Covid	NANO
	12 week workshop based industry innovation project program	3 week industry projects program for students with business, government & community organisations	3 week online industry projects program for students with business, government & community organisations	2 week online industry research project program
Scalability	Medium-High	Medium	Medium	High
Cost / student	\$1000	\$500	\$500	\$150
Duration	12 weeks	3 weeks	3 weeks	2 weeks
Work	120 hours	50 hours	50 hours	25 hours
% Online	25%	50%	100%	100%



A sample of 7909 students spread across 124 cohorts were analysed.

Program	Cohort	Student Numbers
CONTROL PROGRAM	4	125
MICRO	27	2,346
MICRO ONLINE Covid	17	1,176
NANO	76	4642
TOTAL	124	7,909

Metrics Analyzed

7 key metrics were analyzed across three programs to identify differences potentially attributable to online penetration (full definitions available in appendix 2).

Dimension	Metric
Output quality	Willingness to recommend average (student)
	Willingness to recommend average (industry mentor)
	Moderated final assignment / deliverable score average (industry assessed, academic moderated)
Activity quality	Median difference in team 360 peer evaluations (as a measure of team dissonance)
	Student completion %
Inputs	Hours of work / student
	Cost / student



Summary Findings

- 1 Absolute completion rates were consistently high, with a weaker than expected correlation to lower completion rate
- 2 Intra-team dissonance was not a significant predictor of team performance
- 3 Team dissonance increases with higher levels of online
- 4 Higher levels of online engagement did not reduce output quality
- 5 Higher levels of online engagement did not reduce output quality
- 6 Under appropriate conditions and with appropriate learning design, online experiential learning can deliver comparable quality outcomes at up to 90% lower costs

Analysis

1. Limited correlation between % online and lower completion rate

Against hypothesis

Absolute completion rates were consistently high, with a weaker than expected correlation to lower completion rate



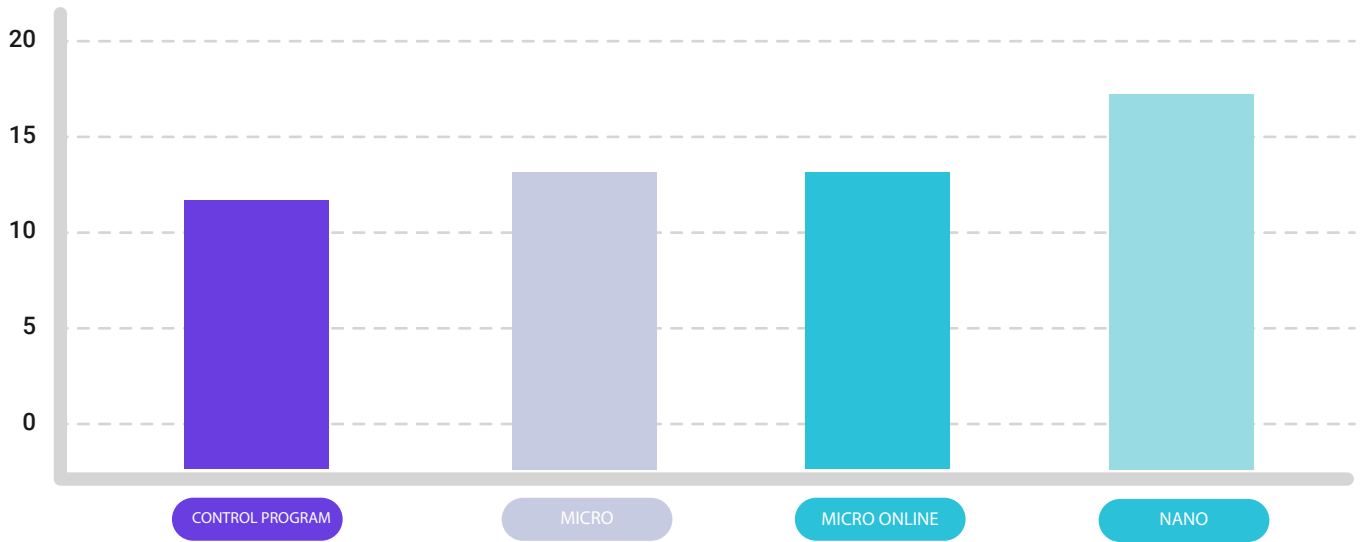
dropout rate completion rate



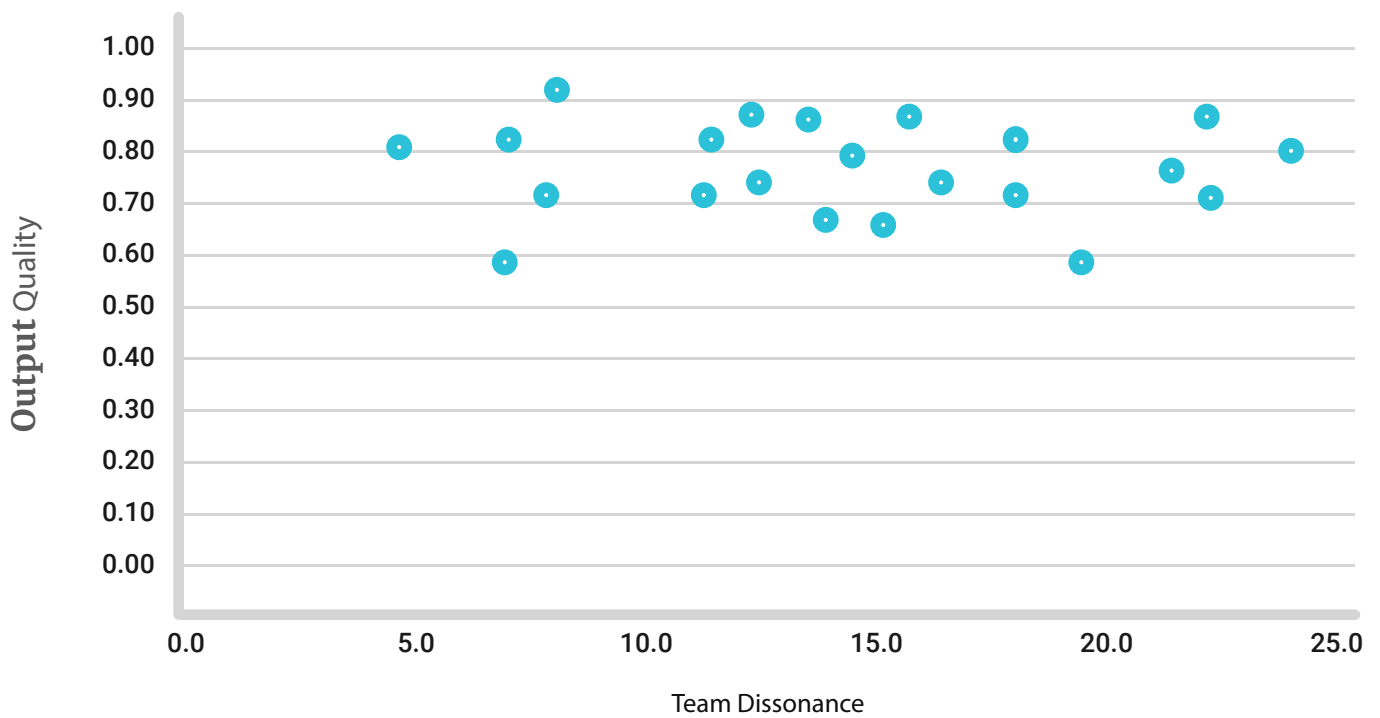
2. Some correlation between % online and higher team dissonance



Team dissonance increases with higher levels of online



3. No significant correlation between lower team dissonance and higher output quality

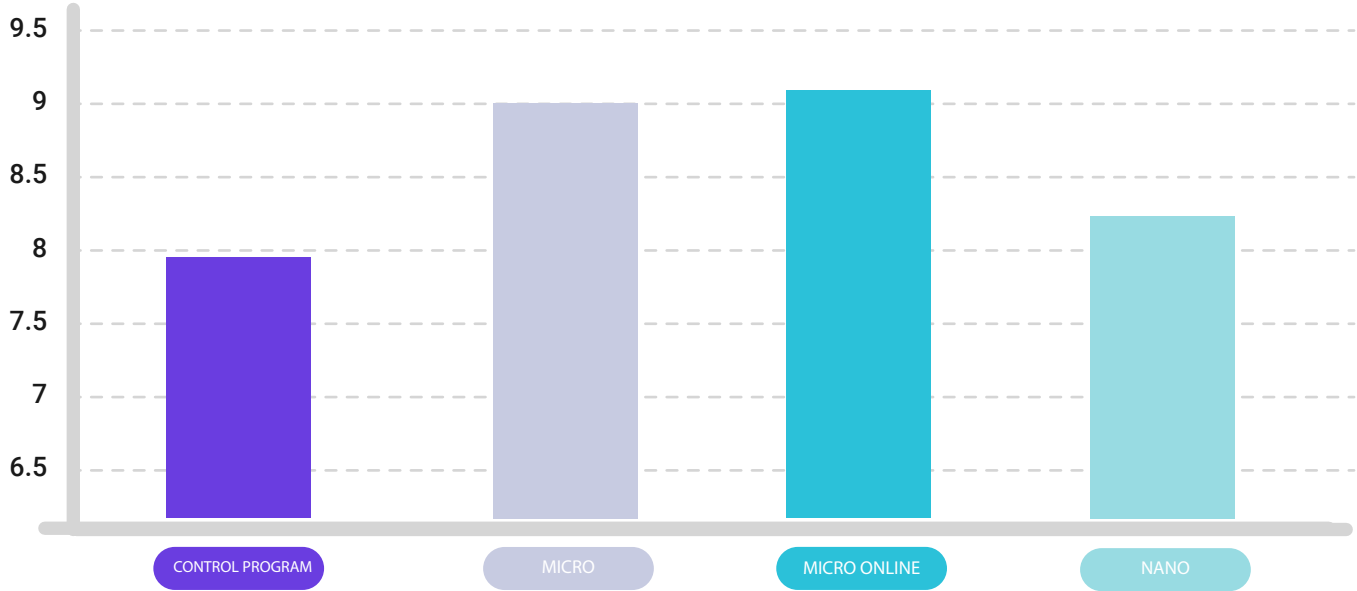




4. No strong correlation between higher % online and lower student satisfaction



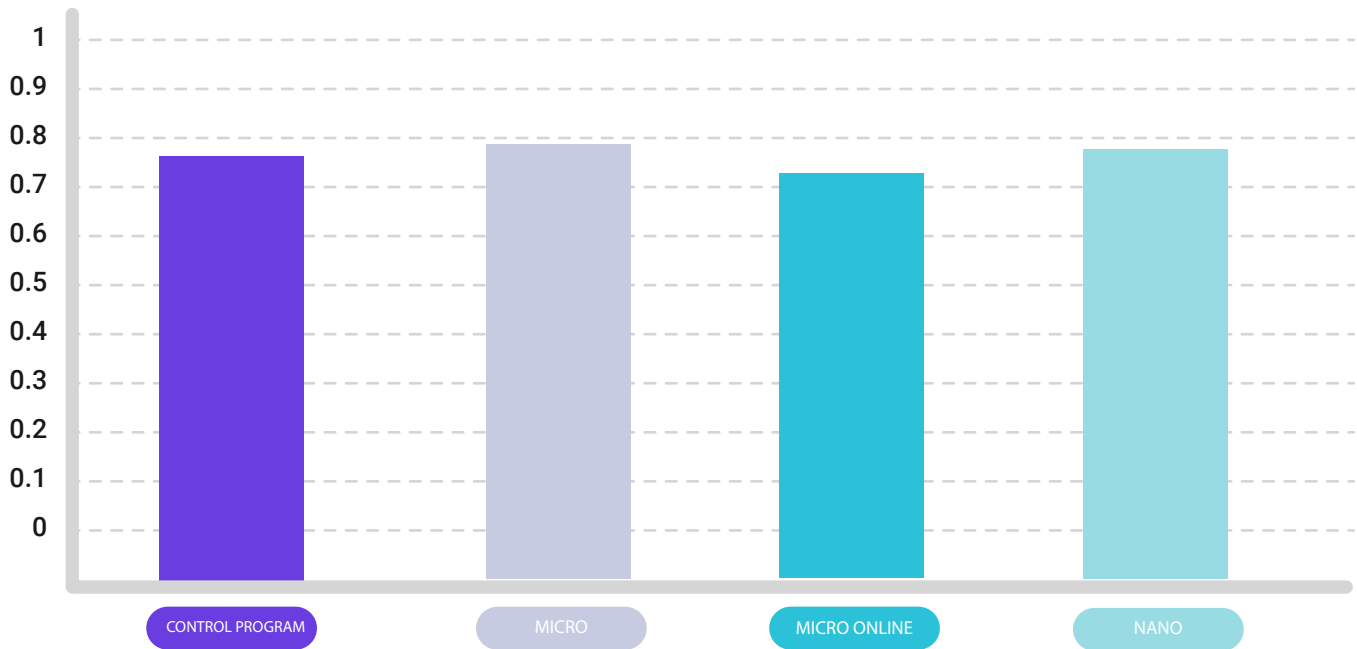
Online can deliver as high or higher student satisfaction than in person models



5. No positive correlation between higher % online and lower output quality



Online can deliver as high or higher output quality than in person models

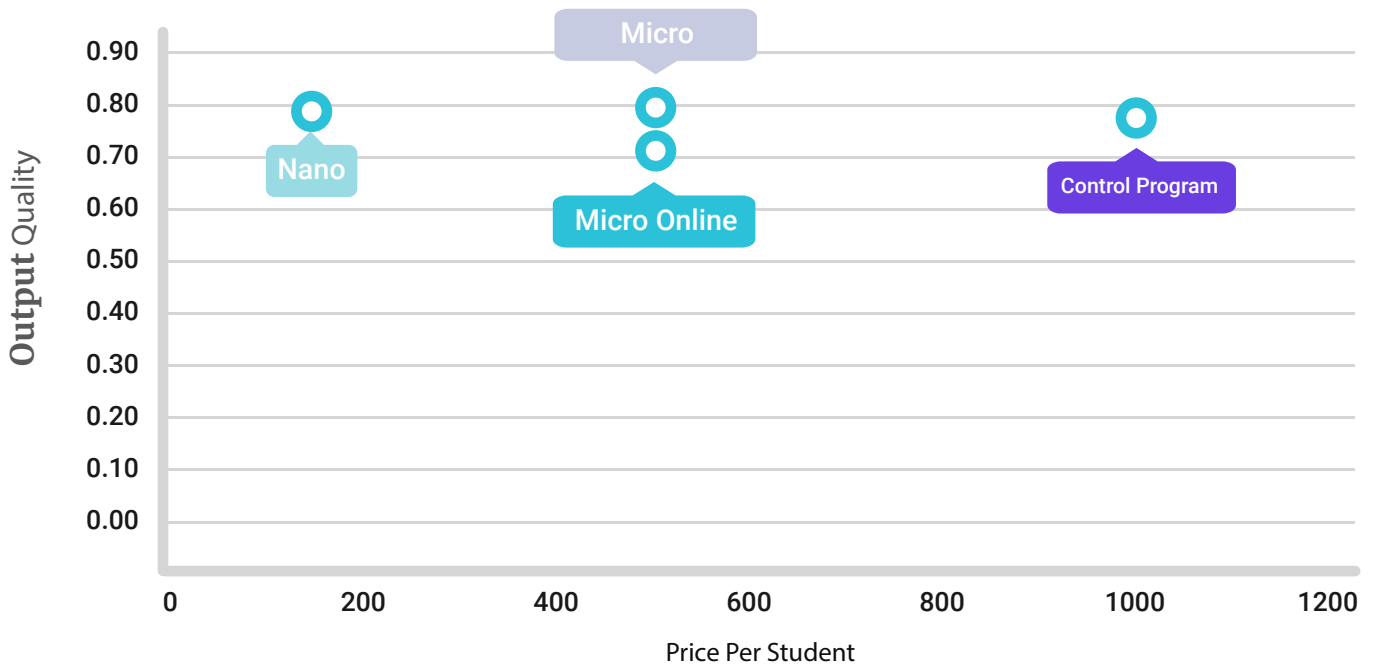




6. The correlation between higher program cost to deliver & lower output quality was weaker than expected



Online only programs exhibited similar output quality at up to 90% lower cost



Causal Factors

We attribute the primary causal factor for the better than anticipated results to be effective experiential learning design & support, with the following specific features which were intentional (but previously untested) elements of the design of the programs;

- ✓ Effective expectations management
- ✓ Shared, valuable objectives, expectations and a common framework for student, mentor and educator collaboration
- ✓ Support for learners to apply knowledge to new settings and complex problems
- ✓ Meaningful engagement between students and experienced practitioners aligned with program learning outcomes
- ✓ Facilitation of the critically reflective learning process that is required for social & emotional competency development



- ✓ Practera platform
 - Structures project learning workflow for students & mentors
 - Effective issue detection, & quality assurance

Caveats & Potential issues

It is important to note some potential caveats with the samples and research findings. Future extensions of the research will attempt to reduce any potential effect from these.

- ✓ Expectations management with participants means that quality scores are not absolutes; they take into account objectives, duration and support levels. An industry mentor assessing a nano program knows the students have done a 2 week online program. A student who was expecting a 12 week workshop based would not be satisfied with a nano program
- ✓ No 'zero online' baseline model was compared
- ✓ Higher online models were more extra-curricular, and also much shorter in duration than the control program
- ✓ There are some natural differences in participant populations (demographics, year of study, field of study) between programs and cohorts
- ✓ Dissonance measure selected may not have been most appropriate
- ✓ % of online measures are approximation

Appendix 1 Data Table

Program	Cohort	Student numbers	% online	Dissonance	Deliverable quality	Willingness to recommend	Cost to deliver
CONTROL PROGRAM	4198	125	25%	11.6	0.77	7.74	1000
MICRO	32555	2359	50%	13.4	7.9	8.88	500
MICRO ONLINE COVID	31369	1182	100%	15.4	0.72	9.23	500
NANO	130078	4845	100%	17.07	8.50	8.59	150



Appendix 2 – Metrics definitions

Metric	Description
Output quality – perception, deliverable scores	
Willingness to recommend average (student)	Average student willingness to recommend the experience to a peer – survey at close of program
Willingness to recommend average (industry mentor)	Average industry participant willingness to recommend the experience to a peer – survey at close of program
Moderated score average (industry)	Average moderated score of all assessable deliverables – industry scored and program manager / academic moderated (light moderation)
Activity quality – teamwork	
Team 360 peer median	Average scores team members have rated self and each other on weekly team 360 evaluations of key attributes – communication, collaboration, work ethic, work quality etc
Dissonance	Average variance across team 360 scores, representing divergent views on team member performance within the team
Dropout %	Average completion of the program by participants
Inputs	
Hours of work	Approximate / recommended hours of work required from students to complete the program
Cost / student %	Approximate average retail price of the program incorporating all cost elements – eg; project sourcing, workshop facilitation, participant support, platform licensing



About Practera

Practera is an edtech company which helps education providers in Universities, Government and Employers deliver experiential learning & employability programs which equip students & professionals for the future of work. These are programs like team projects, skills credentialing, work simulations, global mobility, accelerators, mentoring networks and internships.

Through our technology & programs, we have helped leading Universities improve employability outcomes, student & industry engagement, increase scale and reduce costs.

Customers include more than half of Australian Universities, 5 State Governments, Boston University, Northeastern University, MIT, UC Davis, and thousands of employers engaging with students through the platform.



Beau Leese
Co-Founder/Co-CEO

Beau is a former Head of Strategy, Innovation & International for Australia's national science agency, Director in Higher Education & Strategy with Deloitte Consulting and has worked with a wide range of Universities.



Ruth Marshall
Director of R&D and Data Privacy

She is an experienced R&D and technology executive, entrepreneur and startup advisor, with a strong emphasis in privacy, big data, software engineering and machine learning.



Dr. Djazia Ladjal
Senior Data Scientist

Dr Ladjal has a PhD in Astrophysics with 10+ years of experience in research and data modelling. She has also worked in Media and Marketing developing machine learning algorithms for various industries before pivoting to EdTech.



Alison Li
Senior Experiential Learning Specialist

She is an experienced researcher, statistician and experiential learning specialists with proficient skills and knowledge in data science, education and IT sectors. Alison has 5+ years of experience with Practera.